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# Plastic Money Security Issues In India

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### ABSTRACT

The benefit of plastic money is its accessibility and acceptability with lightness than cash in wallet plus ready notion with the major problem of fraudsters who may exploit the rights of the genuine stakeholders. At present, the computing resources, communication technology, availability of the cards in competitive market are escalating India to be placed at the growing edge of popularity of plastic money. People after demonetization are intensely employing the technology; moreover it's a step towards the digitalization of India. With increasing population of the smart phone users, people are more aware about the cautions needed to pursue while using P-cards. However as compare to the developed nations, in a land of villages- India, the problem become more perilous as there are petite infrastructural facility & literacy, high percentage of less skilled population, old customs and non-reach of the government facilities, spoiling the p-money applicability & security and digital India campaign.. Therefore, besides the plastic money rewards and contributions to the digitalization, present paper contributed towards a range of security issues in addition to technique to make money protected and reliable.

**Keywords:** plastic money, security, rural, hazards, methods.

### INTRODUCTION

#### To Plastic Money and frauds

The use of plastic money was started around 1950 as an alternate to the paper notes or currency<sup>3</sup>. Plastic money is not the plastic currency but the plastic cards in place of the paper notes or the cash. Plastic money is the current need of the attaining 'cashless economy' restricting the black money economy, a dream of Prime Minister

Narendra Modi for digital India, a program launched on 1<sup>st</sup> of July 2015 to make a digitally enabled society and knowledge economy. For using the digital means for most of the day to day activities like payments, social interactions, information exchange, education, hospitality, complains and suggestions, bookings, reservations, court cases, customer services, attendances of workers, trainings are the key points of the program<sup>5,4</sup>. Advanced communication technology and fast connectivity

through phones, PCs can be helpful to offer secure transactions and 24\*7 hr. facility to meet various emergencies as compared to the oldest system that forced to physically visit the bank or the site for certain tasks are handy now with digitalization and P-cards. Money can be transacted in seconds and information can be transferred at any time at global level. There are various cards available in the market like charge cards, debit cards, credit cards, store cards and gift cards etc which are acceptable in place of the cash money anytime anywhere with connect or connect less facility. The primary services offered by the cards are bill payments, funds transfers, fees payments, and payments at petrol pumps, restaurants, reservation or the gifts<sup>3,4,2</sup>. Different cards prevailing in the market are Master Card, Rupay, American Express, Visa, Coral by ICICI, Media Market, Globus, Reliance cards etc. The key advantage of using cards is the tracking of transfers, proof of payments plus notifications with no slips, manageable, credit facility with later payment option and a sturdy course towards the digitalized economy, no need to carry heavy cash<sup>3,4,2</sup>. Cards can also be used as identity proofs, to check bank balance, receiving statement of transactions<sup>9</sup>, rebate on payments, income tax, discount coupons and the like<sup>6,9,4,5</sup>. If someone is physically present at the machine like ATM, it works wonderfully, however while paying online or sitting at a location far from the bank various problems starts coming inline say Internet connectivity, authenticity, integrity, confidentiality or non repudiation. As a result of huge global losses<sup>17</sup> it is mandatory to secure plastic cards to protects the owner's rights against skimming or hacking by fraudsters<sup>17</sup> to create duplicate cards or issuing of fresh cards intended for making unauthorized payments<sup>10,13</sup>. The illicit user may even get the documents from the old records or personal information from the scrap that is not disposed off properly to get the new card or card may be stolen on the way before reaching to the intended destination<sup>2,14</sup>. According to the United States Federal Trade Commission<sup>14</sup>, rate of identity theft is enlarged by 21 percent in 2008. The payment industry is working tirelessly to improve card verification and security programs to prevent fraud in so-called "card-not-present" transactions online or via mail order and telephone transactions<sup>15</sup>. The very basic resolution of the card connected directly to the bank accounts is the launching of gift cards

or the e-cards with advanced android application which provide a multi layer security during the use of these cards and making payments<sup>2,3</sup>.

### Literature survey

The literature containing various cryptographic methods are less published. After going through lots of work in this context, it is found that most of the writers define the terms plastic money, advantages and key issues. Very few of them talk about the algorithms used in the plastic cards especially in chips. The diagrammatical process of payment through cards is very simple and common. The present work tries to find out the methodology to shield & secure the cards in case of loss or theft or hacking while transacting. With this motive there are various types of cards offered by different companies are also considered and conferred here. Along with the popular cards, few more cards are also categorized say; Amazon gift card<sup>7</sup> with a range of different amount from 500 to 7500 or more suitable for various occasions like anniversary, Onam, sympathy, birthday etc. State Bank gift card is association with Visa International<sup>8</sup> is also available up to a maximum amount of 50000 with a validity of 3 years<sup>8</sup>. Union Banks cards for making online purchases, account information, gift cards for example CARD that is charged with the salary<sup>11</sup>, IRCTC Union Bank prepaid cards, tax free meal cards, reward cards, Suvidha prepaid cards for multiple access points like ATMs, POS (Point of Sale), e-commerce and Suvidha outlets with 24\*7 banking service, smart pay cards with daily POS transactions with a limit of 50000<sup>12</sup>. The other gift cards include Fasttrack, Home centre, Holii, Pantaloons Gold, Reliance Retail gift card, Titan<sup>14</sup>, American Express, Taj gift cards (India)<sup>15</sup>, CINQO Digital tax-free meal vouchers for food and non alcoholic beverages<sup>16</sup>, ICICI cards for different purposes including online recharge, travel & shopping, Coral gift cards<sup>16,17</sup> etc. Various smart cards are made up of polyesters, acrylonitrile, polyvinyl chloride, in April 2009, Japanese company developed a smart card made up from paper. Smart cards provide a proof of identification, data store and verification through application protocol data units by smart card accepting device<sup>22</sup>. Security in smart card is through a serial bi-directional transmission channel having capacity of 9600 bps in a half-duplex mode<sup>22</sup>.

### EMV Technology for Security

EMV stands for Europay, Master Card and Visa<sup>17</sup> formed in 1994 and activated in 2015. The chip technology in plastic cards initially used by the French Banks to implant a small microprocessor chip in the cards in order to provide a safeguard against cheats through cards. The EMV apply symmetric cryptographic techniques to legalize the transaction and ensure the safety of records<sup>17</sup>. In this technology a PIN or signature is used to authenticate the transaction with contact or contactless facility. It is more reliable than magnetic strip in the sense that it contains detailed information about card holders thus increase the verification process having more storage capacity than magnetic strip plus employment of cryptography for verification, authorization and preservation of integrity of data in addition to the types of the payments<sup>17,18</sup>. Thus a fine standard for fraud free transactions<sup>17,18</sup> with a requirements of EMV enabled point of sale terminals (POS)<sup>18</sup> as compared to magnetic strips as strips can be read without the consumer's knowledge<sup>18</sup>. EMV technology is managed by the EMV Co LLC possessed by JCB, American Express, MasterCard and Visa<sup>18</sup>. Few specified advantages<sup>18</sup> of EMV technology are the protection against the consumer level attacks including forged cards and manipulation at POS, offline data validation, increased mobile payments with a pitfall that if POS terminals are not EMV enabled the card can be triggered to hack and misuse<sup>18</sup>. In EMV technology MAC (Message Authentication Code) protocol is used to check sender's identity and to protect data integrity<sup>19</sup>. The key generator in MAC generates a key randomly which then apply to the input string to get the output. The verification process compare the output with the input, if satisfied the input is accepted otherwise input is rejected<sup>19</sup>. There are mainly 4 types of MACs one is the DES<sup>19</sup> algorithm for cryptography, a Data Encryption standard that accepts a block of 64 bits to get a cipher called Festal cipher published by NIST(National Institute of Standards & Technology. The DES converts the right 32 bits using S-Box and P-Box and XORing with 48 bits of key generated by key generator that takes an encryption key of 56 bits<sup>21</sup>. This way DES algorithm can generate up to 72057594037927936 possible keys and this algorithm contains 16 blocks of stages to get a final output. Advantage of DES is that a small change in the plain text automatically

changes the many bits in the cipher text and can be identified this way<sup>20</sup>.

### Plastic money issues

As a gift of the technological advancements and demonetization, plastic money acquiring the economy a lot, however, not 100 percent replacement of paper money with lots of problems which cannot be ignore, can be minimized but not removed due to certain socio-economic, demographic, financial and technological factors<sup>1,2</sup> they are stronger that cash money however too small and light weight that can be easily stolen, government laws are still not so strong to cover and protects against frauds<sup>10</sup> in this regard user's own responsibility to get aware and ask the bank to stop the payment or further processing in the same sense as we cancelled a issued check but no fine for the complaint this way. With the increase use of e-commerce, plastic cards, frauds have also been multiplied all occur due to loss or theft of cards, involvement of the bank staff, or employee at the purchase counter or their ignorance. The information from the bank statements of other office documents containing the card information or even mobile phones or an opened email id can be used to hack the information that user unaware about the theft<sup>13</sup> giving a false complain of loss of card to get a new issue however card still exist with the genuine card holder<sup>10</sup>. The ultimate loss is the original holder of the cards who lost his right. The cards magnetic strip may be damaged. If one lost his wallet, loss of cash is manageable but loss of cards contains the higher risk of misuse. With so many cards, the weight of wallet is increased that is harmful for health. Apart from the theft, use of plastic money also make us extravagant as we love to pay in few seconds, to avail discounts, to get attractive offer and on the last week of month, we found our accounts empty with so many extra things in our hand and to sell other extra on OLX to get the space to adjust the new items, seems funny. Surfing the net long hours for schemes, online shopping also cut us from our family, turned into short-lived behavior, impatient and a stressed lifestyle forgetting that discounts takes much from the life which are unrecorded. Indian families for day to day expenses, purchasing from fairies, village shops, stalls in fairs, small works like pot makers, works at farms, and gifts during occasions, various

Indian customs require the cash money. In case of stolen cards, cardholders are aware about the loss however in an application fraud, the cardholders are unaware until the misuse of the cards by the forger, cards can be hoarded by the forger for a long time and it is quite difficult to identify the source, in that case cardholder has only the option to mitigate risk of fraud is the regular checking of the account balances. Even some of card holders complained for unauthorized use of their cards. In a report it was found by National Payment Council of India (NCPI) that a malware had crept up into the servers of HDFC, SBI, YES bank, Axis Bank, ICICI and effected more than 32 lakhs credit card which have mostly been issued by Visa and Mastercard, with few RuPay cards<sup>11</sup>. It is further claimed by the economic times that malware spread through the ATMs made by Hitachi corporation. Trak.in website announced that, a malware crept into ATM of Yes Bank in Himachal Pradesh then spread into the servers of other banks<sup>11</sup>. A malware in an ATM can enter in the server of the that bank and can access all the details about the transactions, users and other information and due to the networked branches, crept into other bank's servers also<sup>11</sup>. Credit cards can be hacked through packet sniffing or by session hijacking. People pay online or through cards using PINs and passwords thus these are more vulnerable to hijack the cards though they believe that their transactions are secured, the security can't be breached as internet banking and credit cards utilize Secure Socket Layer SSL but that is quite vulnerable to break thus better that

individual's system must be secured rather than just dependent on the shopping sites as SSL is not meant for individuals<sup>12</sup>. One of the solution to the plastic money thefts or frauds is the implementation of smart money by the use of smart phones as the consumption of smart phones is increasing too much in India, the market is very big for the smart phones in which manufacturer provide inbuilt security, biometrics system, passwords and other android application that are free of cost and can be downloaded easily.

### CONCLUSIONS

With so many security issues lugged in the employment of the plastic money, it seems that in country of traditions like India, cash money cannot be abolished permanently and can run side by side by moving gradually towards the plastic money, equally it is the major requirement of the growing economy and global spread of the business and above serving a vast market to the manufacturers. Problems are there, user has to be too much vigilant in dealings and transactions via cards. An alternate of the plastic money transactions is the smart money transactions which will be the scope of the next paper. A slight answer is the provision of basic training to the cardholders that must be free of cost, also mandatory and easily availed near to home to train them about the precautions to keep them safe from the fraudsters or skimmers. India is moving toward more networked, demonetized economy with robust infrastructure. Plastic Money will be one of the everyday necessities of the community.

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